No. 8200176

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Pure-Seed Testing, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S), INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PERENNIAL RYEGRASS

'2DF'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 31st day of May in the year of our Lord one thousand nine hundred and eighty-four.

Attest:

Kenneth A. [illegible]
Commissioner
Plant Variety Protection Office
Livestock, Meat, Grain & Seed Div.
Agricultural Marketing Service

John R Block
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
2DF	2 DF 5/9/84	PV NUMBER 8200176

2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE	TIME
perennial ryegrass	Lolium perenne	9/7/82	2:30 XX.M. P.M.

4. FAMILY NAME (BOTANICAL)	5. DATE OF DETERMINATION	FEE RECEIVED	DATE
Gramineae	August, 1981	$ 500.00 $ 250.00	9/7/82 5/7/84

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
Pure-Seed Testing, Inc.	P. O. Box 449, 73 West G Street Hubbard, OR 97032	503-981-7333

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Oregon	June 3, 1974

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

4/20/84
Dr. William A. Meyer, Pure-Seed Testing, Inc.
P. O. Box 449, Hubbard, OR 97032

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [ ] YES [X] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

8/16/82
(DATE)

William C Meyer
(SIGNATURE OF APPLICANT)

(DATE)

(SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

EXHIBIT A.

ORIGIN AND BREEDING HISTORY OF
2DF PERENNIAL RYEGRASS

1. 2DF perennial ryegrass is an advanced generation synthetic variety resulting from four cycles of recurrent selection. Parental material consisted of three sources of stem rust resistance collected from old turf areas of St. Louis and Washington D.C. This rust resistant material was then crossed with improved turf-type perennial ryegrass clones selected from old turf areas of the northeastern U.S.

The seedlings from these crosses were then moved to space plant nurseries to initiate the cycles of phenotypic recurrent selection for stem rust and leaf spot resistance, attractive appearance, improved seed yield. Each cycle was followed by progeny testing in seeded turf trials. After four cycles of selection forty-nine clones displaying very good stem rust resistance were selected.

2. Breeder seed of 2DF perennial ryegrass was produced from an isolated space plant nursery of the forty-nine stem rust resistant clones. Seed propagation is limited to three generations of increase from breeder seed--one each of foundation, registered and certified.

3. 2DF is a stable and uniform variety. No off-type plants or variants have been observed in the reproduction or multiplication of 2DF perennial ryegrass. 2DF perennial ryegrass and the progenies of the parental clones have produced turf of good quality and uniformity.

EXHIBIT B.

NOVELTY STATEMENT ON 2DF PERENNIAL RYEGRASS

2DF perennial ryegrass is most similar to Pennfine perennial ryegrass. However, close comparisions show that the two varieties differ in the following characteristics:

1. 2DF perennial ryegrass is resistant to stem rust, while Pennfine is susceptible (Table 6).
2. The glume length of 2DF is 2 mm shorter than Pennfine (Table 3).

FORM APPROVED: OMB NO. 40-R3712

FORM GR-470-36 (9-76)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

OBJECTIVE DESCRIPTION OF CULTIVARS
RYEGRASS
(Lolium spp.)

NAME OF APPLICANT(S)	VARIETY NAME OR TEMPORARY DESIGNATION
Pure-Seed Testing, Inc.	2DF
ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code)	FOR OFFICIAL USE ONLY
P. O. Box 449 Hubbard, OR 97032	PVPO NUMBER 8200176

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in first box (e.g. [0][8][9] or [0][9].)when number if either 99 or less or 9 or less. Descriptions of characters should represent those that are typical for the variety. Ranges may be given also. Measured data should be for SPACED PLANTS. Give additional description for all characteristics that cannot be adequately described in the form below. Append all pertinent comparative trial and evaluation data.

1. SPECIES:

[2] 1 = L. MULTIFLORUM (annual or Italian; includes Westerwoldicum) 2 = L. PERENNE (perennial) 3 = L. RIGIDUM (includes Wimmera)
4 = HYBRID (of species) _____ 5 = OTHER (Specify) _____

2. PLOIDY:

[1] 1 = DIPLOID 2 = TETRAPLOID [ ] 3 = OTHER (Specify)

3. DURATION:

[3] 1 = ANNUAL OR BIENNIAL 2 = SHORT LIVED PERENNIAL (3-4 years) 3 = PERENNIAL (more than 4 years)

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

4. MATURITY (50% HEADED) Use standards from above for comparison:

[3] 1 = VERY EARLY 3 = EARLY 5 = MEDIUM 7 = LATE 9 = VERY LATE

[0] DAYS EARLIER THAN ..... [8] STANDARD CULTIVAR

[0] DAYS LATER THAN ..... [8] STANDARD CULTIVAR

5. MATURE PLANT HEIGHT (Use standard cultivars from above) :

[7][8] CM. HIGH [ ][ ][1] CM. SHORTER THAN ..... [8] STANDARD CULTIVAR

Table 1.

[ ][ ][ ] CM. TALLER THAN ..... [ ] STANDARD CULTIVAR

6. PERCENT WINTER DAMAGE (estimated as percent of the area appearing dead). Use standard cultivars from above for comparison:

[ ][ ][0] PERCENT DAMAGE OF APPLICATION CULTIVAR

[ ][ ][ ] PERCENT DAMAGE OF ..... [ ] STANDARD CULTIVAR

7. TURF DENSITY Use standard cultivars from above:

[4][0][1] TILLERS PER 100 SQ. CM.

[ ][ ][ ] LESS TILLERS PER 100 SQ. CM. THAN .... [ ] STANDARD CULTIVAR

[ ][8][6] MORE TILLERS PER 100 SQ. CM. THAN ... [8] STANDARD CULTIVAR

8. FLAG LEAF (at full growth) Use standard cultivars from above:

[1][6.][6] CM. LENGTH (from ligule to tip) [ ][3.][9] MM. WIDTH (at widest point) Table 1.

[ ][ ][1] CM. SHORTER THAN ..... [8] STANDARD CULTIVAR

[ ][ ][ ] CM. LONGER THAN ..... [ ] STANDARD CULTIVAR

[ ][ ][.5] MM. NARROWER THAN ..... [8] STANDARD CULTIVAR

[ ][ ][ ] MM. WIDER THAN ..... [ ] STANDARD CULTIVAR

[ ] FLAG LEAF AT BOOT STAGE: 1 = DEFLEXED 3 = RECURVED 5 = HORIZONTAL 7 = SEMI-ERECT 9 = ERECT

STANDARD CULTIVARS

1 = GULF 2 = WIMMERA 62 3 = LINN 4 = PELO
5 = NORLEA 6 = ABERYSTWYTH S-23 7 = MANHATTAN 8 = PENNFINE

9. LEAVES:

[3] VERNATION: 1 = LEAVES ROLLED IN YOUNG SHOOTS
2 = LEAVES SEMI-ROLLED (folded with rolled edges)
3 = LEAVES FOLDED IN YOUNG SHOOTS

[3][0] % PLANTS WITH ANTHOCYANIN IN LOWER LEAF SHEATH

[3] FOLIAGE COLOR: 1 = YELLOW GREEN 2 = MEDIUM GREEN 3 = BLUE GREEN

10. SPIKE:

[2][0][3] MM. SPIKE LENGTH (tip to internode below lowest floret)

[1][1] MM. SHORTER THAN [8] } USE STANDARD CULTIVARS FROM ABOVE

[ ][ ] MM. LONGER THAN [ ] }

[5][4][0] MG. PER TEN SPIKES (trimmed to internode below lowest floret)

[ ][ ][ ][0] MG. LIGHTER PER TEN SPIKES THAN [8] } USE STANDARD CULTIVARS FROM ABOVE

[ ][ ][0] MG. HEAVIER PER TEN SPIKES THAN [8] }

[ ][ ] FLORETS PER SPIKELET

PERCENTAGE OF PLANTS WITH:

RACHIS: [ ][ ][ ] % SMOOTH [ ][ ][ ] % ROUGH

SPIKE COLOR: [ ][7][5] % GREEN [ ][2][5] % PURPLE

LEMMA: [ ][ ][0] % AWNED [ ][ ][ ] MM. AWN LENGTH

[5.1] MM. GLUME LENGTH Table 3, [ ] 1 = SPIKELET LENGTH NEARLY EQUAL TO OUTER GLUMES
2 = SPIKELET LENGTH MUCH LONGER THAN OUTER GLUMES

11. COLEOPTILE:

[ ][ ][ ] % PLANTS WITH ANTHOCYANIN IN COLEOPTILE

12. ANTHER COLOR:

[ ][5][7] % PLANTS WITH WHITE ANTHERS [ ][3][5] % PLANTS WITH YELLOW ANTHERS

[ ][ ][8] % PLANTS WITH PURPLE ANTHERS

13. ROOT AND PLANT CHARACTERS:

[1][0][0] % PLANTS WITH PROSTRATE GROWTH HABIT [ ][ ][.5] % PLANTS WITH FLUROESCENT ROOTS

[ ][ ][ ] % PLANTS WITH UPRIGHT GROWTH HABIT

14. SEED:

1 [9][4][0] MG. PER 1,000 SEED [4][9][.8] MM. TOTAL LENGTH OF 10 SEEDS [1][3][.7] MM. TOTAL WIDTH OF TEN SEEDS

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15. DISEASE (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

6	CROWN RUST (Puccinia coronata)		DOLLAR SPOT (Sclerotinia)	6	BROWN PATCH (Rhizoctonia)
6	LEAF SPOT (Helminthosporium)		MILDEW	8	OTHER *(Specify)* Stem rust (Table 5,6)
	SNOW MOLD (Typhula)	6	RED THREAD (Corticium)		

16. INSECT (0 = NOT TESTED, 2 = HIGHLY SUSCEPTIBLE, 4 = MODERATELY SUSCEPTIBLE, 6 = MODERATELY RESISTANT, 8 = HIGHLY RESISTANT):

[ ] *(Specify)* _____

17. GIVE RESEMBLANCE VALUE IN LEFT COLUMN AND VARIETY CODE NUMBER IN RIGHT COLUMN FOR VARIETY WITH WHICH COMPARISON IS MADE (1 = LESS THAN, 2 = SAME AS, 3 = MORE ERECT, MORE RESISTANT, DENSER, MORE PERSISTENT, DARKER OR GREATER HEIGHT.):

RESEMBLANCE	CHARACTER	SIMILAR VARIETY	
2	PLANT HABIT (erectness)	8	1 = GULF
2	TILLERING	8	2 = WIMMERA 62
2	WINTER HARDINESS	8	3 = LINN
2	HIGH TEMP. STRESS RESISTANCE	8	4 = PELO
2	TURF PERSISTENCE	8	5 = NORLEA
2	PLANT COLOR	8	6 = ABERYSTWYTH S-23
2	VERTICAL SEEDLING GROWTH RATE	8	7 = MANHATTAN
3	CROWN DENSITY	8	8 = PENNFINE
2	MOWER SHREDDING RESISTANCE	8	

18. GIVE AREA OF ADAPTATION AND INTENDED USE: Northeast and Northwest U.S. and overseeding

19. GIVE AREA TEST RESULTS PRESENTED FROM: New Jersey and Oregon

COMMENTS:

EXHIBIT D.

ADDITIONAL DESCRIPTION OF 2DF PERENNIAL RYEGRASS

2DF perennial ryegrass is a dark green, early maturing, turf-type variety capable of producing a moderately dense, medium fine textured turf. It has displayed improved resistance to winter brown blight (Drechslera spp.) and crown rust (Puccinia coronata), and red thread resistance comparable to Pennfine (Tables 5,7).

It has performed very well in winter overseeding studies on dormant bermudagrass in Mississippi and Palm Springs, CA.

TABLE 1.

MORPHOLLOGICAL MEASUREMENTS TAKEN JULY, 1982
ON PERENNIAL RYEGRASSES NEAR HUBBARD, OR
IN SEED YIELD TRIALS SEEDED FALL, 1981

CULTIVAR	PLANT HEIGHT CM	STANDARD ERROR OF MEAN	FLAG LEAF LENGTH CM	STANDARD ERROR OF MEAN	FLAG LEAF WIDTH MM	STANDARD ERROR OF MEAN
Pennfine	79.7	0.47	18.7	0.34	4.5	0.17
2DF	78.4	0.45	16.6	0.41	3.9	0.15

TABLE 3.

MORPHOLLOGICAL MEASUREMENTS TAKEN JULY, 1982
ON PERENNIAL RYEGRASSES NEAR HUBBARD, OR
IN 2 SEPARATE YIELD TRIALS SEEDED FALL, 1980 AND 1982.

	1980 TRIAL		1982 TRIAL	
CULTIVAR	GLUME LENGTH MM	STANDARD ERROR OF MEAN	GLUME LENGTH MM	STANDARD ERROR OF MEAN
2DF	5.20	0.42	5.1	0.36
Pennfine	7.05	0.36	7.6	0.40

TABLE 5.

TURF PERFORMANCE OF PERENNIAL RYEGRASSES
SEEDED NEAR HUBBARD, OR FALL, 1980
AND MAINTAINED AT MODERATE FERTILITY.

CULTIVAR	AVE. TURF QUALITY, 1981 12 OBSERVATIONS 9-1 (9=best)	LEAF SPOT 2/19/81 9-1 (9=best)	CROWN RUST 8/25/81 9-1 (9=best)	RED THREAD 3/12/82 9-1 (9=best)
2DF	5.9	6.4	8.4	6.4
Pennfine	5.8	4.4	6.4	6.4

TABLE 6.

PERFORMANCE OF PERENNIAL RYEGRASSES
IN SEED YIELD TRIALS NEAR HUBBARD, OR IN 1981 & 1982

	STEM RUST 9-1 (9=best)			
	FALL 1979		FALL 1980	FALL 1981
CULTIVAR	SEEDING 7/8/80	SEEDING 7/14/81	SEEDING 7/14/81	SEEDING 7/23/82
2DF	8.5	8.0	8.0	8.5
Pennfine	2.0	4.0	4.0	2.0
LSD (0.05)	1.16	0.66	0.29	1.12

TABLE 7.

HEADING DATES OF PERENNIAL RYEGRASSES
IN SEED YIELD TRIALS NEAR HUBBARD, OR IN 1980, 81 &82

CULTIVAR	FALL, 1979 SEEDING 1980	FALL, 1980 SEEDING 1981	FALL, 1981 SEEDING 1981
2DF	5/22	5/24	5/22
Pennfine	5/22	5/24	5/22